REMARKS

Claims 1-34 are pending in this application.

Claims 4-7, 13-16, 20-22, 26-28 and 32-34 are objected to.

Claims 1-3, 8-12, 17-19, 23-25 and 29-31 are rejected.

The office action dated January 30, 2004 indicates that claim 16 contains allowable subject matter, but is objected to for depending on a rejected base claim. However, claim 16 is an independent claim. Therefore, claim 16 should be allowed.

The office action indicates that claims 4-7, 13-15, 20-22, 26-28 and 32-34 contain allowable subject matter, but are objected to for depending from rejected base claims. Claims 4, 13, 20, 26 and 32 have been rewritten in independent form. Consequently, claims 4-7, 13-15, 20-22, 26-28 and 32-34 should be allowed.

The office action indicates that independent claims 1 and 29 are rejected under 35 USC §102(b) as being anticipated by Lee U.S. Patent No. 5,361,308; and that independent claims 10 and 17 are rejected under 35 USC §102(b) as being anticipated by an article by Zimmerman et al. The office action also indicates the independent claim 23 is rejected under 35 USC §103(a) as being unpatentable over Burke U.S. Patent No. 5,042,077 in view of Zimmerman. The rejections of claims 1-3, 8-9 and 17-19 have been rendered moot by cancellation of claim 1 and the amendments above to claims 2 and 17. The remaining rejections are respectfully traversed.

Amended claim 2 recites a method of processing pixel intensity values of a digital image. The method comprises clipping those pixel intensity values outside of a local variable range; and mapping those pixel intensity values within the local variable range. The variable range depends on minimum and maximum

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intensity values of a local pixel neighborhood. The mapping has a shape that depends on dynamic range of the local pixel neighborhood. The shape of the mapping function determines the type and strength of spatial filtering operation (e.g., light sharpening) that is performed.

Zimmerman does not teach or suggest a spatial filtering technique having a shape that is dependent upon dynamic range of a local pixel neighborhood. Zimmerman discloses a histogram-equalization mapping technique that is useful for correcting an image for uneven background illumination.

Lee does not teach or suggest scaling/clipping on a variable range. The office action cites col. 5, lines 20-29 of Lee, but that passage appears to disclose global scaling and clipping, not local scaling and clipping.

Therefore, claim 2 and its dependent claims 3 and 8-9 should be allowed over Lee and Zimmerman. Claim 8 has been amended to depend from claim 2. New claim 35, which depends from claim 2, should also be allowed.

Claim 17 has also been amended to recite a contrast mapping function with a shape that depends on dynamic range of the local pixel neighborhood. Amended claim 17 and its dependent claims 18-19 should be allowed for the reasons above. New claim 36, which depends from claim 17, should also be allowed.

Claims 10, 23 and 29 recite an image sharpening method, apparatus and article. There is no teaching or suggestion that Zimmerman's method can be used for image sharpening. Zimmerman's method of local histogram equalization is suited for correcting uneven illumination in images. It is not suited for image sharpening because it tends to spread the local output histogram.

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As discussed above, Lee does not teach or suggest spatial filtering based on a variable range. Therefore, claims 10-12, 23-25, and 29-31 should be allowed over Lee and Zimmerman.

Claims 10-12 and 23-25 should be allowed for the additional reason that Zimmerman's method is not a per-pixel method since the contrast map is computed at a much lower resolution than the image resolution. Claims 10-12 and 23-25, in contrast, recite per pixel processing.

Withdrawal of the rejections is respectfully requested. The examiner is invited to contact the undersigned to discuss any issues that might remain.